

REMARKS

In the December 1, 2006 Office Action, claims 1, 6-8, 10, 12-14, 17, 29, 38 and 42 were rejected, claims 18, 19 and 21-24 were allowed, and claims 2-5, 11, 15, 16, 30 and 39-41 were deemed objectionable. This Response amends claims 1, 2, 10, 11, 29, and 38, and cancels claims 30 and 39 without prejudice or disclaimer. After entry of the foregoing amendments, claims 1-8, 10-19, 21-24, 29, 38, and 40-42 (27 total claims; 7 independent claims; no additional claim fees due) remain pending in the application. Reconsideration of the application is respectfully requested in view of the above amendments and the following remarks.

Allowable Claims

Applicant appreciates the acknowledgement that claims 18, 19, and 21-24 are allowable.

Objected Claims

The Office Action indicated that claims 2-5, 11, 15, 16, 30, and 39-41 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In this regard, independent claim 29 has been amended to include all of the limitations of claim 30, which is now canceled. Accordingly, claim 29 is now allowable. In addition, independent claim 38 has been amended to include all of the limitations of claim 39, which is now canceled. Accordingly, claim 38 and claims 40-42, which depend from claim 38, are now allowable.

Applicant notes that claim 17, which depends from claim 16, was rejected under §102(e). Since the Office merely objected to claim 16, Applicant believes that claim 17 was inadvertently rejected. Applicant requests clarification of this inconsistency as needed.

As explained in more detail below, independent claims 1 and 10 have been amended, and Applicant submits that claims 1 and 10 recite allowable subject matter. Accordingly, Applicant believes that claims 2-5 (which depend from claim 1) and claims 11, 15, and 16 (which depend from claim 10) are also allowable. For this reason, Applicant respectfully declines to rewrite claims 2-5, 11, 15, or 16 in independent form at this time.

§102 Rejection

Claims 1, 6-8, 10, 12, 17, 29, 38, and 42 stand rejected under 35 U.S.C. §102(e) as being anticipated by Madsen, USPA 2004/0234192 A1, filed May 21, 2003 ("Madsen"). As mentioned above, claims 29, 38, and 42 are allowable in view of the amendments to

independent claims 29 and 38. Accordingly, Applicant respectfully traverses this rejection as applied to claims 1, 6-8, 10, 12, and 17. Moreover, Applicant reserves the opportunity to swear behind the filing date of Madsen.

Madsen generally discloses an optical all pass filter that utilizes a demultiplexer/multiplexer element to create multiple subband optical branches. Each branch includes dispersive elements, phase control elements, and/or delay elements [Madsen, at Abstract]. The version shown in Madsen's FIG. 1 is a transmissive architecture, while the versions shown in Madsen's FIG. 2 and FIG 3 are reflective architectures.

Referring to Madsen's FIG. 1, the elements labeled  $D$  are dispersive filters 13, the elements labeled  $T$  are delay lines 14, and the elements labeled  $\Phi$  are phase controls 15. Notably, each transmission branch includes a respective delay line 14, and Madsen does not teach or suggest the use of variable delay lines 14 (i.e., as best understood, each delay line 14 represents a fixed amount of delay). The actual delay of each delay line 14 is selected to tune the overall delay of the architecture [Madsen, at paragraphs 0025 and 0030].

Referring to Madsen's FIG. 2 and FIG. 3, the reflective architectures also utilize parallel subband branches. The delay lines 14 in FIG. 2 are equivalent to those discussed above in the context of FIG. 1. The mirror 21 reflects the optical signal in each subband branch such that it travels back and forth through the dispersive filters 13 and the delay lines 14.

Regarding independent claims 1 and 10, Madsen does not teach each and every limitation recited therein. For example, amended claim 1 now recites that each differential delay line comprises a long A optical fiber and a short B optical fiber, where these two optical fibers are both connected to at least one of the phase actuated switchers. No new matter has been presented – this limitation appears in a number of Applicant's original claims. Moreover, amended claim 1 now recites that each phase actuated switcher is configured to switch an input signal to the long A optical fiber or the short B optical fiber of its respective differential delay line. No new matter has been presented – support for this limitation can be found in Applicant's specification at, e.g., paragraphs [035] to [039]. Applicant's FIG. 5 illustrates an embodiment that implements such phase actuated switchers. For this example, the leftmost switcher (which is associated with coupler 321) is controlled to switch its reflected input signal to the long A optical fiber 304 or the short B optical fiber 306. The switcher immediately to the right of the leftmost switcher is controlled to switch its reflected input signal to its respective

long A optical fiber or its respective short B optical fiber (these optical fibers appear under the  $\pi 2^K$  label in FIG. 5).

In contrast, Madsen does not teach or suggest differential delay lines having a long A optical fiber and a short B optical fiber connected in the arrangements recited in claims 1 and 10. Moreover, Madsen does not teach or suggest the use of phase actuated switchers that switch their respective input signals to either the long A optical fiber or the short B optical fiber of its respective differential delay line. Although the Madsen architectures (FIG. 2 and FIG. 3) utilize multiple subband branches having respective delay lines, the architectures do not include switchers that switch an input signal to either a long A optical fiber or a short B optical fiber. As best understood, these Madsen architectures simply reflect all of the subband branch signals back into their respective subband branches, without any selective switching whatsoever.

For at least the above reasons, independent claims 1 and 10 are not anticipated by Madsen. For the same reasons, claims 6-8 (which depend from claim 1) and claims 12 and 17 (which variously depend from claim 10) are not anticipated by Madsen. Accordingly, Applicant requests the withdrawal of the §102 rejection of claims 1, 6-8, 10, 12, and 17.

#### §103 Rejection

Claims 13 and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Madsen. Applicant respectfully traverses this rejection.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify a reference or to combine the teachings of multiple references. Second, there must be a reasonable expectation of success. Third, the prior art must teach or suggest all of the recited claim limitations. Of course, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure. Applicant respectfully submits that the Examiner has not met all of the above criteria.

Claims 13 and 14 depend from independent claim 10. As discussed above, claim 10 has been amended to clarify certain aspects of the recited subject matter, and Madsen fails to teach or suggest that recited in claim 10. Consequently, claims 13 and 14 are not unpatentable over Madsen for at least the same reasons given above. In other words, one skilled in the art having access to the teaching of Madsen would not have been motivated to arrive at the subject matter recited in claims 13 and 14. Madsen and the cited prior art contain no reasonable suggestion or

motivation to modify Madsen in a manner that would take advantage of the long A optical fiber, the short B optical fiber, and the switchers as recited in claims 13 and 14.

For at least the above reasons, claims 13 and 14 are not unpatentable over Madsen, and Applicant requests the withdrawal of the §103 rejection of those claims.

In conclusion, for the reasons given above, all claims now presently in the application are believed allowable and such allowance is respectfully requested. Should the Examiner have any questions or wish to further discuss this application, Applicant requests that the Examiner contact the undersigned attorney at (480) 385-5060.

If for some reason Applicant has not requested a sufficient extension and/or has not paid a sufficient fee for this response and/or for the extension necessary to prevent abandonment on this application, please consider this as a request for an extension for the required time period and/or authorization to charge Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

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